

**What is claimed is:**

1. An isolated polypeptide comprising an amino acid sequence which has at least 80% identity to the amino acid sequence of SEQ ID NO:2 over the entire length of SEQ ID NO:2.

2. An isolated polypeptide as claimed in claim 1 in which the amino acid sequence has at least 90% identity.

10 3. An isolated polypeptide as claimed in claim 1 in which the amino acid sequence has at least 95% identity.

4. The polypeptide as claimed in claim 1 which comprises the amino acid sequence of SEQ ID NO:2 or SEQ ID NO:4.

15 5. The polypeptide of SEQ ID NO:2 or SEQ ID NO:4.

20 6. An isolated polynucleotide comprising a nucleotide sequence that has at least 80% identity to a nucleotide sequence encoding the polypeptide of SEQ ID NO:2 over the entire coding region; or a nucleotide sequence complementary to said isolated polynucleotide.

7. An isolated polynucleotide as claimed in claim 6 in which the nucleotide sequence has at least 90% identity.

25 8. An isolated polynucleotide as claimed in claim 6 in which the nucleotide sequence that has at least 95% identity.

30 9. An isolated polynucleotide which comprises the nucleotide sequence contained in SEQ ID NO:1 encoding the polypeptide of SEQ ID NO2; or a nucleotide sequence complementary to said isolated polynucleotide.

10. An isolated polynucleotide which comprises a nucleotide sequence which has at least 80% identity to that of SEQ ID NO: 1 over the entire length of SEQ ID NO:1; or a nucleotide sequence complementary to said isolated polynucleotide.
- 5 11. An isolated polynucleotide as claimed in claim 10 in which the nucleotide sequence which has at least 90% identity.
12. An isolated polynucleotide as claimed in claim 10 in which the nucleotide sequence which has at least 95% identity.
- 10 13. The polynucleotide of claim 10 which is the polynucleotide of SEQ ID NO: 1 or SEQ ID NO:3.
- 15 14. A DNA or RNA molecule comprising an expression system which is capable of producing a polypeptide comprising an amino acid sequence which has at least 80% identity with the polypeptide of SEQ ID NO:2 when said expression system is present in a compatible host cell.
- 20 15. A host cell comprising the expression system of claim 14.
16. A process for producing a polypeptide comprising culturing a host of claim 14 under conditions sufficient for the production of said polypeptide and recovering the polypeptide from the culture.
- 25 17. An antibody immunospecific for the polypeptide of claim 1.
18. A method for the treatment of a subject in need of enhanced activity or expression of the polypeptide of claim 1 comprising:
- 30 (a) administering to the subject a therapeutically effective amount of an agonist to said polypeptide; and/or
- (b) providing to the subject an isolated polynucleotide comprising a nucleotide sequence that has at least 80% identity to a nucleotide sequence encoding the polypeptide of SEQ

ID NO:2 over the entire length of the encoding region; or a nucleotide sequence complementary to said nucleotide sequence in a form so as to effect production of said polypeptide activity *in vivo*.

19. A method for the treatment of a subject having need to inhibit activity or  
5 expression of the polypeptide of claim 1 comprising:
- (a) administering to the subject a therapeutically effective amount of an antagonist to said polypeptide; and/or
  - (b) administering to the subject a nucleic acid molecule that inhibits the expression of the nucleotide sequence encoding said polypeptide; and/or
  - 10 (c) administering to the subject a therapeutically effective amount of a polypeptide that competes with said polypeptide for its ligand, substrate, or receptor.

20. A process for diagnosing a disease or a susceptibility to a disease in a subject related to expression or activity of the polypeptide of claim 1 in a subject comprising:

- 15 (a) determining the presence or absence of a mutation in the nucleotide sequence encoding said polypeptide in the genome of said subject; and/or
- (b) analyzing for the presence or amount of said polypeptide expression in a sample derived from said subject.

20 21. An agonist of the polypeptide of claim 1.

22. An antagonist of the polypeptide of claim 1.

23. A GDNF alpha 3 receptor characterised by the deduced amino acid sequence of

25 SEQ ID NO:6; or a fragment thereof.

24. A polypeptide which has the amino acid sequence of SEQ ID NO:6

25. A polynucleotide which encodes a polypeptide characterised by the deduced  
30 amino acid sequence of SEQ ID NO:6.

26. A polynucleotide comprising the partial DNA sequence given in SEQ ID NO:5.

27. The polynucleotide which has the sequence given in SEQ ID NO:5.

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